

**FIRE PROTECTION PLAN
FALLBROOK OAKS TM5449 RPL1
North County Fire Protection District
Fallbrook, CA
County of San Diego**



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CERTIFICATION PAGE

FIRE PROTECTION PLAN

For

Fallbrook Oaks-TM 5449

North County Fire Protection District



This Fire Protection Plan is based upon requirements listed in Ordinance No. 9870, San Diego County Consolidated Fire Code as amended, applicable sections relating to wildland/urban interface. Chapter 47 of the 2007 California Fire Code with references to Chapter 7a of the California Building Code, Urban Wildland Interface (WUI) requirements. International Wildland Urban Interface Code, 2006 addition.

Future development shall comply with superseding code requirements that may not have been in effect when this plan was developed.

FALLBROOK OAKS

FIRE PROTECTION PLAN

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FIRE PROTECTION PLAN

For

Fallbrook Oaks-TM 5449

North County Fire Protection District

1.0 GENERAL DESCRIPTION

The Fallbrook Oaks Development is located within a declared High Fire Severity Zone in a rural area of the City of Fallbrook, County of San Diego, California. North County Fire Protection District (NCFPD) is the fire authority for the development and will provide fire protection for the Fallbrook Oaks community. The proposed project is to be a 18 lot/parcel development

Fallbrook Oaks Lots 9 and 10 are located in the northern subdivision boundary adjacent to agricultural groves. Lots 1, 15 and 16 are located along the western boundary and abut or are adjacent to Valley Oaks Blvd. West. Lots 3-8 are located along the eastern boundary and are adjacent to the designated wetland buffer. Lot 17 is located and isolated in the extreme northeast corner of the development and abut Ranger Road.

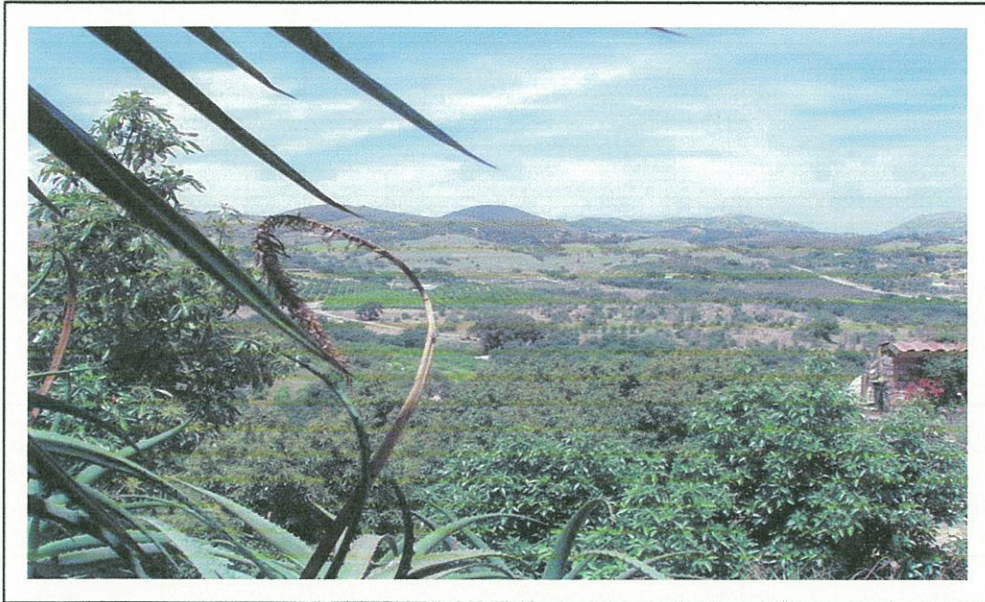


Photo 1: View looking north from Poppy Lane into the Fallbrook Oaks Development

Primary access into the development is via Reche Road, a two-lane county road which generally runs northeast and southwest. The primary access to the project area is at the south boundary of the development on to proposed Valley Oaks Blvd. West. The ingress/egress access street into Keystone Oaks Road ending at a cul-de-sac enters between Lots 1 and 15 along Valley Oaks Blvd. West.

The area adjacent to the northern boundary is located adjacent to agricultural developed orchards. The adjacent area to the west of the western boundary along Valley Oaks Blvd. West, the main access road into this development, includes high hazard native and non-native vegetation. The eastern boundary is located in an adjacent wetland buffer area with high hazard native vegetation. The area adjacent to the southern boundary is along Reche Road with a few isolated homes built in high hazard native vegetation. The entire area has limited fire equipment response due to the distance from existing fire stations.

A Fire Protection Plan (FPP) must be submitted to and approved by the North County Fire Protection District. The FPP assesses the overall (on-site and off-site) wildland fire hazards and risks that may threaten life and property associated with the 18 proposed homes in the Fallbrook Oaks Development. In addition, the FPP establishes both the short-term and long-term fuel modification actions required to minimize any projected fire hazards, and assigns annual maintenance responsibilities for each of the required fuel modification actions.

1.1 General Information

Developer:	Keystone Fallbrook Oaks, LLC. 1010 University Ave., #372 San Diego, CA 92103
Approving City Departments:	
Fire Authority:	North County Fire Protection District
Engineering:	San Diego County Planning Department
Water & Sewer:	Fallbrook Public Utility District

1.2 Coordination Between Supporting Plans

The purpose of this FPP is to provide Fuel Modification Zone treatment direction for developers, architects, builders, North County Fire Protection District and San Diego County Planning Officials, and the Fallbrook Oaks individual lot owners to use in making all proposed structures on all lots in the development relatively safe from future wildland wildfires. This FPP includes:

- A wildland fire hazard-rating assessment and expected fire behavior of off-site and on-site native vegetative fuels;
- A long-term perimeter vegetative fuel modification treatment and maintenance plan to minimize any loss to the residential structures on all 18 proposed lots due to wildland wildfire; and,
- A long-term interior open space fuel modification treatment plan and “Firewise landscaping” criteria to be deployed around the planned structures on all lots.

2.0 WILDLAND FIRE HAZARD AND RISK ASSESSMENT

2.1 Off-site Fire Hazard and Risk Assessment

The Fallbrook Oaks development is located in a hilly zone approximately 12 miles inland from the Pacific Ocean. The northern and eastern boundaries abut agricultural orchards, rural areas north and east of the subdivision. These agricultural areas pose a minimal fire hazard as long as they are managed and maintained. The southern and western boundaries are adjacent to existing scattered, rural single family homes with high hazard vegetation. Existing/proposed wetland buffer exists on the north and east boundaries between the main development and three separate lots located at the extreme northeast corner of the development. These areas are vegetated with native and non-native annual grasses, poison oak, common buckwheat, thistle, laurel sumac, coastal oak and coulter pine [Southern California (SCAL) Fuel Model 18]. As is typical of coastal sage scrub plants, a high percentage of the plants have an abundance of dead material. This is especially true of the black sage, buckwheat and sumac plants. This is due to the effects of the local Mediterranean climate where warm wet winters promote lots of new growth, and long, hot and very dry summer seasons sometimes occur. Occasionally, multi-year droughts cause significant parts of these plants to die back. All of these plants are adapted to the intense wildfires that they need for species regeneration. However, if wildfire occurs at too frequent intervals, the scrub group plant community reverts to a more flammable, less desirable community of short lived annual grasses with little wildlife value and poor ability to protect the soil.

The coastal sage scrub plant community has functioned unimpeded in this Mediterranean climate for thousands of years, with both plants and animals thriving and adapting to the wind-driven wildfires that burn through the coastal plains every 20 to 30 years. Today this world-renowned climate draws thousands of newcomers to southern California each year, and particularly to San Diego County. In the endless search for new home sites, more new homes are being built in the coastal sage plant community (**the wildland/urban interface**) where fire will also continue to be a visitor on both a planned and unplanned basis.

The goal of the FPP is to prevent the loss of lives, homes and personal property when wildfires do occur with the challenge of allowing the development of well-planned home sites interspersed with fully functioning coastal sage scrub community habitats. This goal is accomplished by requiring FIREWISE COMMUNITIES built with fire resistant materials and properly designed and maintained fuel modification treatments that will significantly reduce the Wildfire Hazard.

2.2 On-site Fire Hazard and Risk Assessment

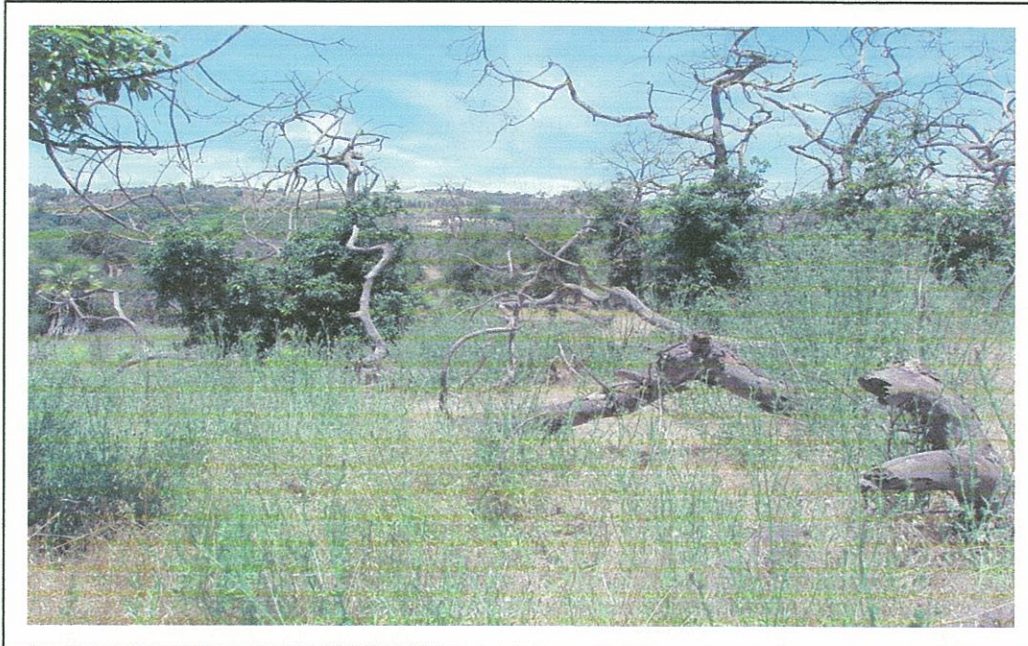
With regard to the Fallbrook Oaks development, interior open space areas are vegetated with annual grasses, buckwheat, coastal live oak, laurel sumac and scattered sage that will pose extreme fire hazards annually as the plants cure or lose live fuel moisture during hot, dry summer seasons. Biological open spaces found adjacent to the development are environmentally protected areas. These areas can contribute to a damaging wildland fire event if not properly managed.

Photo's 2 thru 13 were taken prior to the Rice Fire. Left un managed the area would generally return to this state within the 30 to 50 time frame used in High Hazard mapping by CalFire.

Photo 14 and 15 represent the present state along the east and west property boundaries. The grove area on the north boundary was not affected in the fire.



↑ Photo 2: Coast Live Oak with grass surface fuel located in lot 17



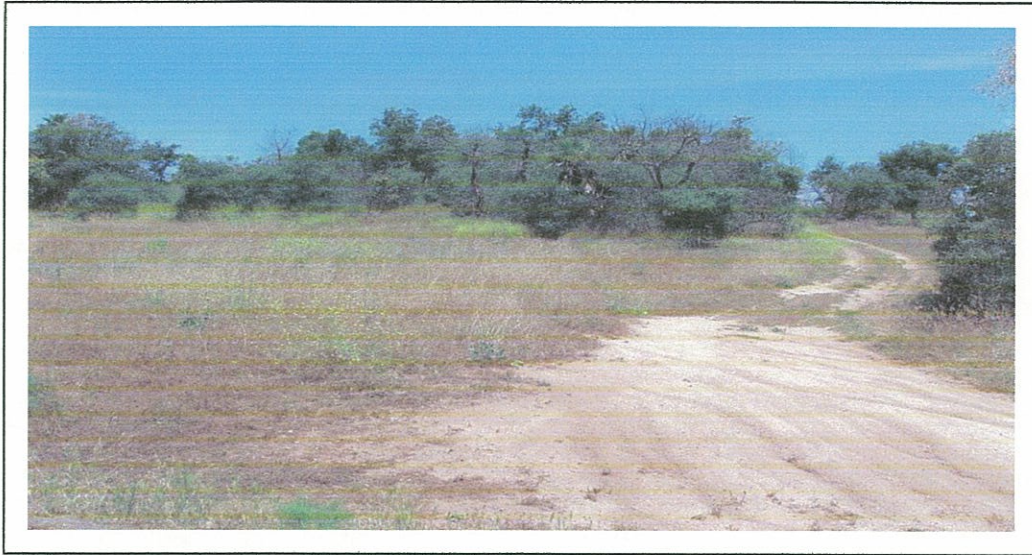
High Fire
Hazard
Vegetation

↑ Photo 3: From upslope Lot 1 looking north toward Keystone Oaks Road



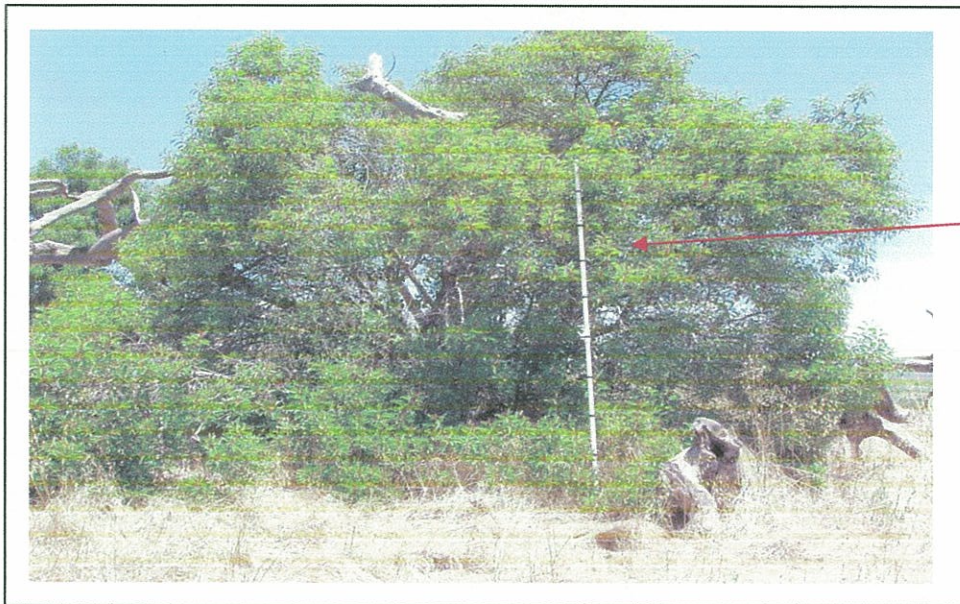
Hardwood with
litter, Fuel Model
9 and Fuel Model
1

↑ Photo 4: From Valley Oaks Blvd West at the propose entrance point to Keystone Oaks Road (20% slope)



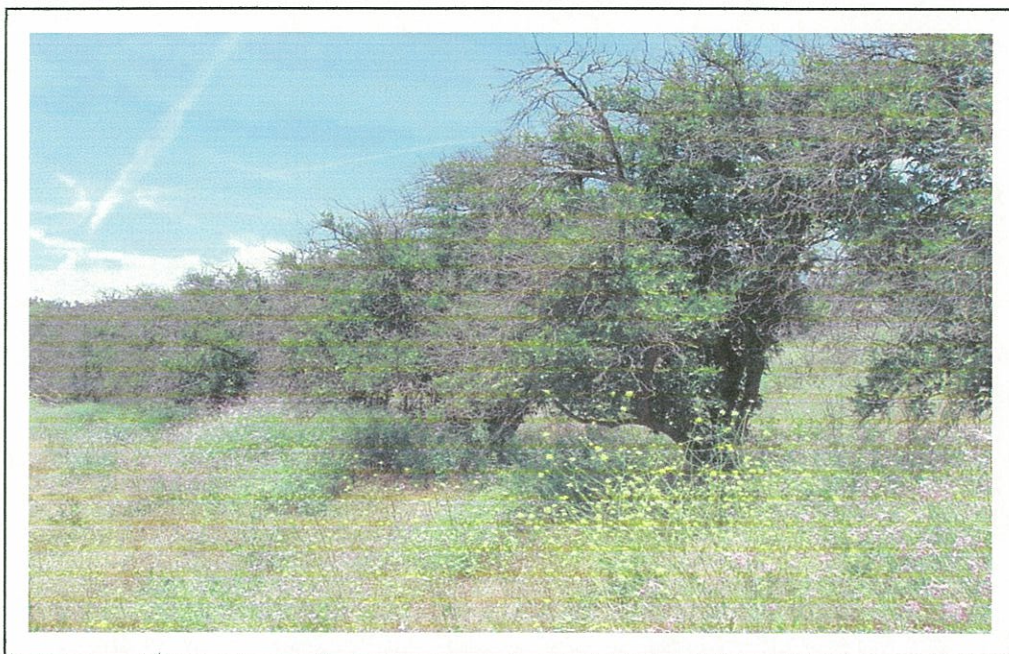
Fuel Model 1 and 9,
grasses and hardwoods

↑ Photo 5: Typical non-native grasses and coast live oak trees along the water line access adjacent to Lot 1



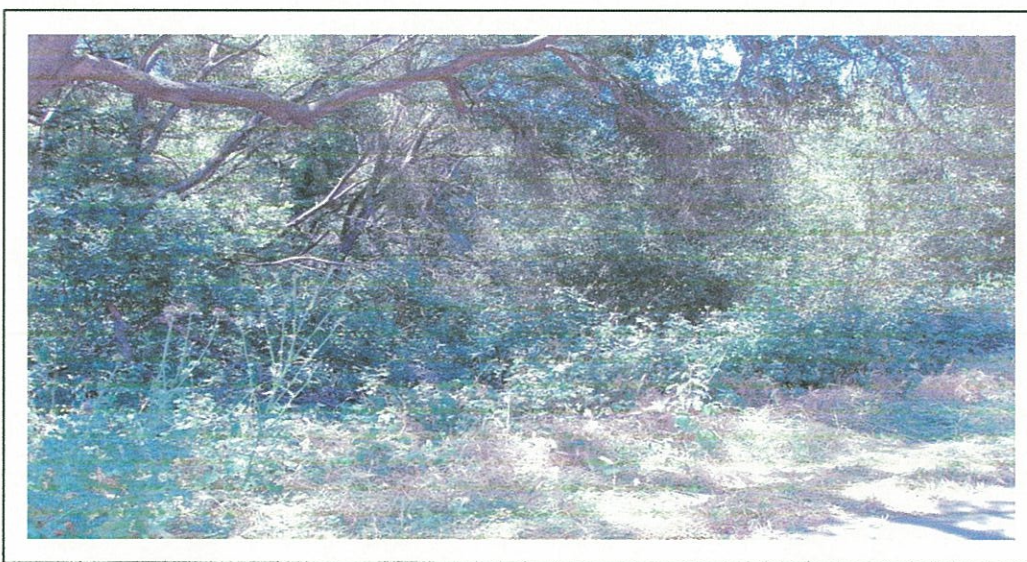
Ten foot
(10') pole,
one foot
increments

↑ Photo 6: From proposed Fallbrook Oaks Blvd. west looking north (laurel sumac)



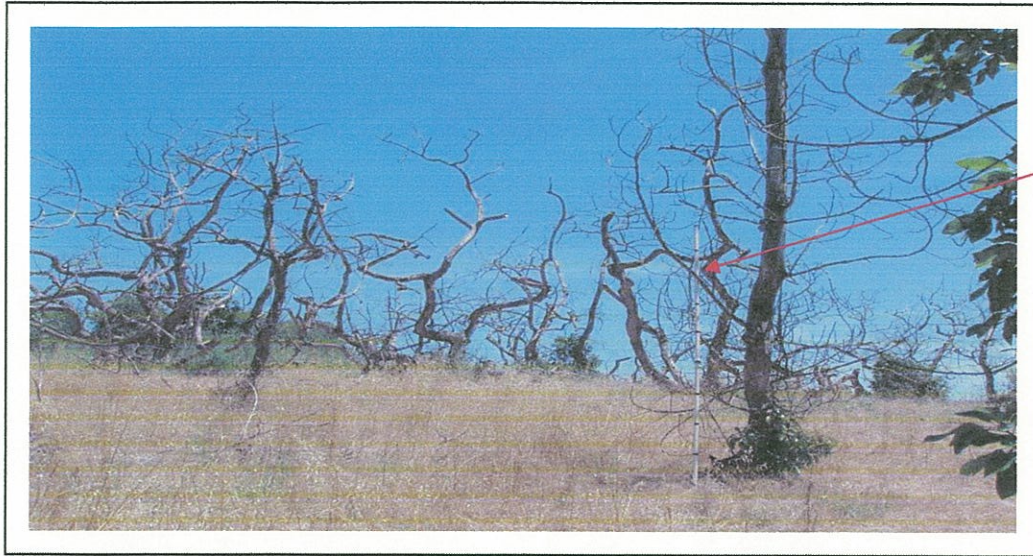
Abandoned
agricultural orchard

↑ Photo 7: Looking south from the north boundary upslope toward Lot 9



Protected RPO
wetland habitat

↑ Photo 8: Looking into existing RPO wetland from the north boundary adjacent to Lot 7



Ten foot
(10') pole,
one foot
increments

↑ Photo 9: Abandon agricultural orchard in Lot 14



↑ Photo 10: Looking west from Valley Oaks Blvd West into Garrett Ranch property



Palm Trees with
fire hazard fronds

↑ Photo 11: From Lot 12 looking north at un-maintained palm trees



↑ Photo 12: Looking south into neighboring development



↑ **Photo 13: Looking north on the proposed project into active and managed agricultural orchards**

Photos taken after the Rice Fire, at Ranger Rd. east along parcel line, and west at Valley Oaks.



Photo 14 Area between Ranger Rd. and Bio buffer looking north.



Photo 15 Area between lots 15, 19 and adjacent property north.

In summary, any wind or topography driven wildfire burning under a northeastern (*Santa Ana*) wind pattern through the adjacent open space to the north and northeast creates an **extreme** wildland fire hazard to the structures on Lots 4-9. Wildland fires starting north of the development on a typical fire day with a southwest wind will burn away from the proposed structures and will generally not be a significant wildland fire hazard. However, a fire starting south of the development on a typical summer day with a southwest wind will create a **high** wildland fire hazard to structures on Lots 3, 15 and 19. All residential structures are threatened through wind-blown embers regardless of the wind direction. The Class A (non-combustible) roof assembly, including the roof cover, will mitigate against wind-blown ember threat.

The proposed fuel Modification treatments (Zone 1 and Zone 2 “Firewise” landscaping) and the use of “Firewise” building construction standards which includes the use of Class “A” roofs, eaves of heavy timber construction or boxed eaves with no attic ventilation openings or ventilation louvers in eave overhangs or between rafters at eaves, dual pane windows and non-combustible fire resistive exterior wall materials should significantly reduce the wildfire risk and loss of any of the 18 homes due to wind driven embers and radiant heat against the boundaries of the Fallbrook Oaks Development.

2.3 Predicting Wildland Fire Behavior

“Can wildland fire behavior really be predicted? That depends on how accurate you expect the answer to be. The minute-by-minute movement of a wildland fire will probably never be totally predictable—certainly not from weather conditions forecast many hours before the fire. Nevertheless, practice and experienced judgement in assessing the fire environment, coupled with a systematic method of calculating fire behavior, yields suprisingly good results (Rothermel 1983).”

The BEHAVE PLUS: Fire Behavior Prediction and Fuel Modeling System—Burn Subsystem, Part 1 by Patricia L. Andrews, is one of the best systematic methods for predicting wildland fire behavior. The BEHAVE fire behavior computer modeling system was developed by USDA—Forest Service research scientists at the Intermountain Forest Fire Laboratory, Missoula, Montana, and is utilized by wildland fire experts nationwide (refer to APPENDIX ‘C’). “Because the model was designed to predict the spread of a fire, the fire model describes the fire behavior only within the flaming front. The primary driving force in the fire behavior calculations is the dead fuel less than one-fourth inch in diameter; these are the fine fuels that carry the fire. Fuels larger than three (3”) inches in diameter are not included in the calculations at all (Andrews 1986)”.

The BEHAVE fire model describes a wildfire spreading through surface fuels, which are the burnable materials within six (6’) feet of the ground and contiguous to the ground.

Regardless of the limitations expressed, experienced wildland fire managers can use the BEHAVE modeling system to project the expected fire intensity, rate-of-spread and flame lengths with a reasonable degree of certainty for use in Fire Protection Planning purposes. The **FIREWISE 2000, Inc.** evaluation team used the computer based BEHAVE PLUS Fire Behavior Prediction Model to make the following fire behavior assessments for the Fallbrook Oaks Development.

2.3.1 Wildland Fire Behavior Calculations for the on-site hazardous vegetative fuels.

Wildland fire behavior calculations have been projected for the hazardous vegetative fuels on the undeveloped areas in proximity to Lots 11 and 12 along the ridge top. The projections are based on scenarios that are "worst case" San Diego County fire weather assumptions. The scenarios are depicted in Tables 2.2.1 thru 2.2.4. The tables display the expected Rate of Fire Spread (expressed in feet per minute), Fireline Intensity (expressed in British Thermal Units per foot per second) and Flame Length (expressed in feet) for four separate BEHAVE PLUS–Fire Behavior Prediction and Fuel Modeling System Computer Calculations. The tables also include the calculation inputs used in the BEHAVE PLUS program which were obtained from the Fallbrook Oaks site observations and fuel levels typically observed during the local fire season.

Fire Scenario #1: Late Fire Season With Late Season North, Northeast And East Wind (Santa Ana Wind) Conditions Along Northeast, North Project Boundary, Interior Slopes and Ridges

Table 2.2.1 Fire Scenario #1 Expected Fire Behavior For Late Season 60 MPH Santa Ana Wind Condition Fire Burning in a Fuel Model SCAL 18 (coastal sage scrub)	
Rate of Spread	296 feet/minute
Fireline Intensity	4358 BTU's/foot/second
Flame Length	44.3 feet in length
Fire Behavior Calculation Input Data:	
<ul style="list-style-type: none"> • 30 percent up slope • 60 mph 20-foot wind speed (24 mph mid-flame wind speed) • 0° direction of wind vector to slope 	
Anticipated Fuel Moistures	
* 1-Hour Fine Fuel Moisture of2%	
* 10-Hour Fuel Moisture of.....3%	
* 100-Hour Fuel Moisture of 5%	
* Live Herbaceous Fuel Moisture of.....30%	
* Live Woody Fuel Moisture of.....50%	

Table 2.2.2, which follows, shows the change in fire rate of spread, intensity and flame length following the completion of the *Firewise* required fuel modification work. The table displays the results of using two different fuel models (FM). FM-1 is a perennial native grass stand one (1) foot tall. FM-9 is hardwoods with litter six to eight feet tall. The plants should be spaced at one and one-half times the projected height of the mature plant (a plant six feet in height at maturity would need nine feet of spacing from other plants). In addition, native grasses must be removed from beneath the shrubs to eliminate vertical fuel ladders. The data in red displays the additional reduction in rate of spread, intensity and flame length when annual treatment is conducted after the grasses have headed out and cured. Treatment is typically completed in May or June each year.

Fire Scenario #2: Late Fire Season With Late Season North, Northeast And East Wind (Santa Ana Wind) Conditions Along Northeast, East Project Boundaries, Interior Slopes and Ridges

Table 2.2.2	
Expected Fire Behavior For For A Late Season 60 MPH Santa Ana Wind Condition In Fuels Modified To a FIREWISE Non-irrigated Zone 3 Criteria [Combined Fuel Model (Fuel Model 1 – Native Grasses 80% and Fuel Model 9 – Hardwoods with litter (20%))].	
Rate of Spread	732 feet/minute
Fireline Intensity	1415 BTU's/foot/second
Flame Length	12.7 feet in length
Fire Behavior Calculation Input Data: <ul style="list-style-type: none"> • 30 percent up slope • 60 mph 20-foot wind speed (24 mph mid-flame wind speed) • 0° direction of wind vector to uphill slope Anticipated Fuel Moistures * 1-Hour Fine Fuel Moisture of2% * 10-Hour Fuel Moisture of.....3% * 100-Hour Fuel Moisture of5% * Live Herbaceous Fuel Moisture of.....30% * Live Woody Fuel Moisture of.....50%	
COMMENTS: The above fire behavior projections are based on grass fuels one-foot tall and hardwoods 6 to 8 feet tall. Therefore, Rates of Spread, Fireline Intensity and Flame Lengths should be reduced two-thirds for 4-inch stubble grass fuels, i.e., <div style="text-align: right;"> Rate of Spread = 242 feet/minute Fireline Intensity = 467 BTU's/ft/sec Flame Length = 4.2 feet in length </div>	

Fire Scenario #3: Late Fire Season With Above Average Southwest Prevailing Wind Conditions Along Southwest Project Boundary

Table 2.2.3	
Expected Fire Behavior For Above Average 30 MPH Southwest Prevailing Wind Condition Fire Burning in a Fuel Model SCAL 18	
Rate of Spread	161 feet/minute
Fireline Intensity	4358 BTU's/foot/second
Flame Length	33.5 feet in length
Fire Behavior Calculation Input Data: <ul style="list-style-type: none"> • 30 percent up slope • 30 mph 20-foot wind speed (12 mph mid-flame wind speed) • 0° direction of wind vector to uphill slope Anticipated Fuel Moistures * 1-Hour Fine Fuel Moisture of2% * 10-Hour Fuel Moisture of.....3% * 100-Hour Fuel Moisture of 5% * Live Herbaceous Fuel Moisture of.....30% * Live Woody Fuel Moisture of.....50%	

Fire Scenario #4: Topography Driven Fire During Late Fire Season With Average South, Southwest and West Prevailing Wind Conditions Along Southwest Project Boundary in a non-irrigated thinned fuel model to Zone 3 requirement

Table 2.2.4 Expected Fire Behavior For Topography Driven Fire at the Southwest Project Boundary Under Average 30 MPH Southwest Prevailing Wind Conditions in a [Combined Fuel Model (Fuel Model 1 – Native Grasses 80% and Fuel Model 9 – Hardwoods with litter (20%)).	
Rate of Spread	732 feet/minute
Fireline Intensity	1415 BTU's/foot/second
Flame Length	12.7 feet in length
Fire Behavior Calculation Input Data: <ul style="list-style-type: none"> • 30 percent up slope • 30 mph 20-foot wind speed (12 mph mid-flame wind speed) • 0° direction of wind vector to uphill slope Anticipated Fuel Moistures <ul style="list-style-type: none"> * 1-Hour Fine Fuel Moisture of2% * 10-Hour Fuel Moisture of.....3% * 100-Hour Fuel Moisture of 5% * Live Herbaceous Fuel Moisture of.....30% * Live Woody Fuel Moisture of.....50% 	
<p>COMMENTS: The above fire behavior projections are based on grass fuels one-foot tall and hardwoods 6 to 8 feet tall. Therefore, Rates of Spread, Fireline Intensity and Flame Lengths should be reduced two-thirds for 4-inch stubble grass fuels, i.e.,</p> <p style="text-align: right;"> Rate of Spread = 242 feet/minute Fireline Intensity = 467 BTU's/ft/sec Flame Length = 4.2 feet in length </p>	

Fire Scenario #5: With Late Season North, Northeast And East Wind (Santa Ana Wind) Conditions Along Northeast & North Project Boundary within untreated Resource Protection Ordinance (RPO) wetland

Table 2.2.5 <u>Late Fire Season With Late Season North, Northeast And East Wind (Santa Ana Wind) Conditions Along Northeast & North Project Boundary within the RPO wetland buffer.</u> <u>Fuel Model TL9 Oak Woodland with very high load litter</u>	
Rate of Spread	124 feet/minute
Fireline Intensity	2732 BTU's/foot/second
Flame Length	17.1 feet in length
Fire Behavior Calculation Input Data: <ul style="list-style-type: none"> • 30 percent up slope • 60 mph 20-foot wind speed (24 mph mid-flame wind speed) • 0° direction of wind vector to uphill slope Anticipated Fuel Moistures <ul style="list-style-type: none"> * 1-Hour Fine Fuel Moisture of2% * 10-Hour Fuel Moisture of.....3% * 100-Hour Fuel Moisture of 5% * Live Herbaceous Fuel Moisture of.....30% * Live Woody Fuel Moisture of.....50% 	

Table 2.2.4 above simulates the change in fire rate of spread, intensity and flame length following the completion of the *Firewise* required fuel modification work. The table displays the results of Fuel Model 1, which is grasses with a combined fuel loading of 0.74 tons of dead and live material and Fuel Model 9, which is a hardwood with litter plant community with a combined total of 3.5 tons of 1hr, 10hr and 100hr fine fuel loading per acre. Table 2.2.5 simulates the fire behavior expected in the Oak Woodland /RPO wetland vegetation in late season Santa Ana Wind conditions adjacent to lots 16-18.

The plants should be spaced at 1 ½ the projected height of the mature plant (a plant six feet in height at maturity would need nine feet of spacing from other plants). In addition, native grasses must be removed from beneath the shrubs to eliminate vertical fuel ladders. The data in red displays the additional reduction in rate of spread, intensity and flame length when annual treatment is conducted after the grasses have headed out and cured (treatment is typically completed in May or June of each year and the dead material is pruned out of the native mixed chaparral plants).

Tables 2.2.5C and 2.2.5D show the change in fire rate of spread, intensity and flame length following the completion of the required fuel modification work. Table 2.2.5 E shows the Fire Behavior in untreated Fuel Model TL9 (Oak Woodland with very high load litter) in the RPO wetland. Fire behavior reductions from a Fuel Model SCAL 18, Coastal Sage Scrub fuels (as depicted in Tables 2.2.5 A and 2.2.5.B) to Treated Thinning Zones B and C (Simulated combined Fuel Model 9-Hardwoods with litter and Fuel Model 1-Grasses) depicted in Table 2.2.5C are as follows:

SUMMARY FIRE BEHAVIOR TABLE:

TABLE 2.2.5A – 60-mph Northeast Wind

<u>Prior to Fuel Treatment</u>	
Rate of Spread	296 Ft/min
Fireline Intensity	4358 BTU/ft/sec
Flame Length	44.3 Feet

TABLE 2.2.5C - 60-mph Northeast Wind

<u>After Fuel Treatment</u>	
Rate of Spread	242 ft/min
Fireline Intensity	467 BTU/ft/sec
Flame Length	4.2 Feet

VS.

TABLE 2.2.5B – 30-mph Southwest Wind

<u>Prior to Fuel Treatment</u>	
Rate of Spread	161 Ft/min
Fireline Intensity	54358 BTU/ft/sec
Flame Length	33.5 Feet

TABLE 2.2.5D – 30-mph Southwest Wind

<u>After Fuel Treatment</u>	
Rate of Spread	242 ft/min
Fireline Intensity	467 BTU/ft/sec
Flame Length	4.2 Feet

VS.

TABLE 2.2.5E – 60-mph Northeast Wind

<u>Prior to Fuel Treatment</u>	
Rate of Spread	124 Ft/min
Fireline Intensity	2732 BTU/ft/sec
Flame Length	17.1 Feet

TABLE 2.2.5F – 60-mph Northeast Wind

<u>After Fuel Treatment</u>	
VS.	No Treatment Allowed in wetland buffer

3.0 ASSESSING STRUCTURE IGNITIONS IN THE WILDLAND/URBAN INTERFACE

Structure ignitions from wildland fires basically come from two sources of heat: convective firebrands (flying embers) and radiant heat. During periods of high fire intensity and strong, dry winds convective firebrands have the capability of being transported over great distances (several hundred feet and up to several miles). **All homes will be constructed with non-combustible roofing and fire-resistive exterior building materials, and no attic vents or attic ventilation louvers will be installed in eave overhangs or between rafters at eaves, per Wildland/Urban Interface Fire Code Standards.**

The homeowner will be required to maintain the property to Zone 1, Zone 2 and Zone 3 fuel modification standards and will keep the roof and any rain gutters free of leaves, needles and other combustible debris and all firewood and other combustible materials will be properly stored away from the structure so that burning embers falling on or near the structure have no suitable host. The owners will be responsible for maintaining on their own an ongoing educational program to keep all doors and windows tightly closed whenever a wildland fire is reported in the near vicinity.

“Firewise” landscaping is the act of converting native vegetation from a highly flammable and high intensity state to a more fire resistant and lower intensity condition. Other than non-combustible roofing and exterior building materials, “Firewise” landscaping has proven to be the most effective treatment for minimizing structure losses due to wildfire radiant heat.

The SIAM Ignition Study indications and the personal experience of the **FIREWISE 2000, Inc.** evaluation team helped establish the fuel modification recommendations found in Section 5.0: Fuel

Modification Descriptions, Recommended Treatments and Landscaping & Fuel Treatment Location Map.

3.1 Terminology.

Although any plant will burn, wildland fire research has shown over and over that some types of plants, including many natives, are more fire resistant than others. The Recommended Plant List in APPENDIX "A" includes a listing of these low fuel volume, non-oily, non-resinous plants commonly referred to as "Fire Resistant." This term comes with the proviso that each year these plants are pruned, all dead wood is removed and all grasses or other plant material are removed from beneath the circumference of their canopies.

The Approved Plant List in APPENDIX "A" includes native species occurring on the Reche Road property that are not considered undesirable from either a biological or wildfire risk management perspective provided they are properly maintained by June of each year.

4.0 FIRE DEPARTMENT RESPONSE TIMES

The Fallbrook Oaks Development is within the response area of the North County Fire Protection District. The nearest fire station, Fire Station 4 at 4375 Pala Mesa Drive, is approximately 2.81 miles or 4 minutes travel time away. Despite the relatively close proximity of the nearest fire station, there is absolutely no assurance that the Engine Company will be in its station when a wildfire might threaten the Fallbrook Oaks Development from an ignition outside the development. On high/extreme fire danger days there are often multiple starts and engine companies are often already deployed on other incidents. For this reason, "Firewise" Communities use "Survivable Space" strategies to enable their communities to survive a wildfire on their own without the loss of any structures or lives, and without the intervention of the Fire Department if fire fighting resources are drawn down and unavailable for extensive periods of time.

5.0 FUEL MODIFICATION DESCRIPTIONS, REQUIRED TREATMENTS and FUEL TREATMENT LOCATION MAP

5.1 Fuel Modification Descriptions

5.1.1 Setback Zone 1. Zone 1 comprises the first 50 feet around a structure (front, back and side yards) and is commonly called the defensible space zone. The first 50 feet closest to the structure is critical for fire safety. The plantings and structural accessories within this area need to be properly chosen, fire resistive, properly placed and well maintained in order to provide fire safety and limit the possibility of transmission of fire to the house from the surrounding landscape. This *Firewise* landscaped zone is irrigated and primarily consists of fire resistant, maintained native or ornamental plantings usually less than 18 inches in height. However, this zone may contain occasional fire resistant trees and single well spaced ornamental shrubs up to 48 inches in height, intermixed with ground covers and lawn. *Plants in this zone need to be fire resistant and shall not include any*

pyrophytes that are high in oils and resins such as pines, eucalyptus, cedar, cypress or juniper species.

Trees must be planted so that when they reach maturity the tips of their branches are at least 10 feet away from any structure. Refer to APPENDIX 'A' "FIREWISE" Planting Considerations, Lists for Recommended Plants and APPENDIX 'B' for Prohibited Plants.

Thick, succulent or leathery leaf species are the most "fire resistant".

Regular maintenance and continued irrigation is most important in Zone 1. Irrigated Zone 1 will be cleared of all existing native vegetation, and replanted with drought tolerant and irrigated fire resistant lawns, ground covers and shrubs. Each individual lot owner in the Fallbrook Oaks Development will be required to maintain that portion of his or her yard that lies within Zone 1 in a typical "firewise" yard landscaping and irrigated condition (i.e., lawn, ornamental shrubs and occasional well spaced fire resistant trees). Shrubs and trees will be selected from the recommended plant list in APPENDIX 'A' and are to be annually maintained free of dead material. Trees will be placed and maintained so that their crown cover at maturity will be more than ten feet from any structure. All tree crowns will be separated by 20 feet and each tree will be limbed to maintain a separation of six feet between the ground fuels (shrubs and ground covers) and the lower limbs. If water for irrigation is limited, use more of the available water in Zone 1 rather than in Zone 2. Plants with high moisture content are less likely to burn. Non-flammable concrete patios, driveways, swimming pools, walkways, boulders, rock, and gravel can be used to break up fuel continuity within Zone 1.

5.1.2 Fuel Modification Irrigated Zone 2. Zone 2 shall be irrigated low fuel volume area 51 to 100 feet away from any structures and 16 feet (30") along streets and driveways (Shown as green on the Fuel Treatment Location Map). ~~Fallbrook Oaks Community~~ The proposed HOA for TM 5449 will be required to maintain vegetation treatments along streets, secondary access roads and maintenance buildings within the development to Zone 2 criteria. This zone shall be irrigated fire resistant landscaping out to 50 feet from Zone 1. Selected native plant clusters must be separated by at least one and one-half times the fully developed height of the retained plants. Ground cover, bedding plants, shrubs, and flowers must be fire resistive, drought adaptive, low profile, low dead-to-live fuel ratio, high leaf moisture, low fuel volume, and low oil content. Irrigated grass may be four inches high, and groundcover less than four inches high. All of the dead material must be pruned out on an as-needed basis, but at least annually each spring. Trimmed material can be cut and scattered as mulch. "Firewise" landscaping criteria are important in this zone.

The following native species will not be permitted to regrow on manufactured slopes or in the natural areas that are part of the fuel modification plan: Chamise (*Adenostoma faeciculatum*); California sagebrush, (*Artemisia californica*); flat-topped buckwheat, (*Eriogonum fasciculatum*); and black sage, (*Salvia mellifera*).

Lot owners shall be responsible for maintaining fuel modification Zones 1 and 2 within their lots. Weed abatement regulations will be followed if the lot is not landscaped. In the event a lot is repossessed, the unit/agency holding title to the lot will be responsible for the maintenance.

5.1.3 Fuel Modification Non-Irrigated Zone 3. Zone 3 can be non-irrigated natural slope thinning areas greater than 100 feet from the residence. Zone 3 may include single or small clusters of trimmed

fire resistant ornamental and/or native plants [natives only in Thinning Zone 3 (*yellow*) up to 18 inches in height and Thinning Zone 3 (*yellow*)] up to 48 inches in height and trimmed ornamental and native trees [natives only in Thinning Zone 2] limbed up to six feet from the ground.

5.1.4 Manufactured Slopes [Fallbrook Oaks Lot Owner Maintained (Fuel Modification Zone 2)]. These are irrigated, temporarily irrigated, or non-irrigated and maintained slopes replanted with low fuel volume plants. Maintenance of these manufactured slopes will be the responsibility of the individual homeowners if they fall within the lot boundary. The lot owner will be responsible for the maintenance of all Common Area Manufactured Slopes (maintenance buildings/roadside treatment areas) within the individual lot owner boundaries. Long-term maintenance shall meet Fuel Modification Zone 2 criteria (Shown as *green* on the Fuel Treatment Location Map).

5.1.5 Natural Slopes [Fallbrook Oaks Lot Owner Maintained (Fuel Modification Zone 3)]. Natural Slopes are those slopes that are maintained by the Fallbrook Oaks lot owner to Zone 2 criteria but are not within a Manufactured Slope Landscape Zone. Highly flammable native vegetation shall be removed and annual grasses and other weeds shall be weed-whipped down to a four-inch stubble height by June 1st of each year. The following native species will be totally removed from natural slope fuel modification areas: Chamise, (*Adenostoma faiculatum*) California sagebrush, (*Artemisia californica*); flat-topped buckwheat, (*Eriogonum fasciculatum*); and black sage, (*Salvia mellifera*).

5.2 Required Treatments and Actions

5.2.1 Lot Front, Side and Back Yards. (Shown as *No Color* on the Fuel Treatment Location Map) Each individual lot owner will be required to maintain his or her front, side and back yards within 15 to 40 feet of their homes with irrigated "Firewise" Zone 1 landscaping. This includes any area on their lot shaded *Purple* (see Section 5.2.2). Any remaining portion of the backyard lot will be maintained to either Zone 1 or Zone 2 criteria, depending upon lot size. Manufactured slopes inside the lot boundary will be maintained to Zone 2 criteria by each lot owner.

5.2.2 Yard Combustible Free Zones. (Shown as *Purple* on the Fuel Treatment Location Map). **Lots 9, 10, 16 and 17 will require that the structure be set back from the individual lot property boundary lines in lieu of the one hundred foot (100') fuel modification treatments required for Zone 1 and Zone 2 criteria.** No combustible structures can be built in the areas shaded purple as designated within each proposed lot. The lot CC&R's will encumber all lots with a restriction banning all combustible structures within those parts of the backyards shaded Purple. Combustible decks, patio covers and gazebos will also be prohibited in these zones. The future homeowners of these lots are not restricted from having concrete patios, concrete walkways or a swimming pools within the purple zone, provided the lot is large enough. The front, back and side yards will be maintained to Zone 1 and Zone 2 criteria by the lot owners. Refer to Appendix D for photos and descriptions of non-combustible decks, patio covers, and railings.

5.2.3 Manufactured Slopes (Lot Owner/HOA Maintained) (Shown as *green* on the Fuel Treatment Location Map). Landscaping and maintenance will be to Zone 1 or Zone 2 criteria. Common area slopes, roadways, driveways and cul-de-sacs will be planted with "Firewise" landscaping, mostly ornamentals, consisting of well spaced and maintained fire resistant plants and trees. Long term maintenance will be by the Fallbrook Oaks individual lot owner/HOA (please refer back to Sections 5.1.1 and 5.1.3). Maintenance will be on-going throughout the year as needed.

5.2.4 Natural Slopes, HOA/Lot Owner Maintained (Shown as Yellow on the *Fuel Treatment Location Map*). Implementation and maintenance will be to Zone 3 criteria. Treatment will consist of thinned and maintained native vegetation to the limit of the property boundary, unless restricted by the Resource Protection Ordinance. Along the canyon bottoms on the eastern and northern boundaries of the development and 10-16 feet along streets/secondary access roads by the Fallbrook Oaks Community HOA. Please refer back to Sections 5.1.3 and 5.1.5.

5.2.5 Biological Buffer (Shown as Blue on the *Fuel Treatment Location Map*) Allowable maintenance within the Resource Protection Ordinance : hand removal of diseased or invasive exotic plants species as identified and quantified in writing by a qualified biologist and approved in writing by the Director of Planning and Land Use, and removal of dead or detached plant material.

The current condition of the buffer on May 7, 2008, is shown in the photos below, since the Rice Fire. Invasives and non-native weeds have begun to grow. Maintenance of this area is necessary to ensure flashy fuels do not accumulate.





Near end of Lot 17 view to the North

5.2.6 Basic Fire-Resistive Construction Requirements For All Structures. All structures (residential/HOA owned) will be built with a Class A Roof Assembly, including a Class A roof covering, and attic or foundation ventilation louvers or ventilation openings in vertical walls shall not exceed 144 square inches per opening and shall be covered with 1/4-inch mesh corrosion-resistant metal screening or other approved material that offers equivalent protection. Attic ventilation shall also comply with the requirements of the Uniform Building Code (U.B.C.). Ventilation louvers and openings may be incorporated as part of access assemblies. Paper-faced insulation shall be prohibited in attics or ventilated spaces.

All chimney, flue or stovepipe openings will have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, 12 gauge minimum thickness or other material found satisfactory by the Fire Department, having 1/2-inch perforations for arresting burning carbon or sparks. It shall be installed to be visible for the purposes of inspection and maintenance.

All Fallbrook Oaks residential structures will have automatic interior sprinklers installed according to the National Fire Protection Association (NFPA) 13D- Standard for the Installation of Sprinkler Systems in One- and Two-family Homes and Manufactured Homes and North County Fire Protection District standards.

Exterior glazing and window walls. Exterior windows, window walls, glazed doors, and glazed openings within exterior doors shall be insulating-glass units with a minimum of one tempered pane, or glass block units, or have a fire-resistance rating of not less than 20 minutes, when tested according to ASTM E 2010, or conform to the performance requirements of SFM12-7A-2.

Glazing frames made of vinyl materials shall have welded corners, metal reinforcement in the interlock area and be certified to ANSI/AAMA/NWDA 101/I.S.2-97 structural requirements.

- No skylight will be allowed on the roof assembly facing hazardous vegetation.
- Window screens shall be of metal or similar non-combustible material of not more than 1/8 inch mesh to prevent embers enter the structure if a window is left open.

The exterior walls surface materials shall be non-combustible or an approved alternate. In all construction, exterior walls are required to be protected with two-inch nominal solid blocking between rafters at all roof overhangs.

All eaves, fascias and soffits will be enclosed (boxed) with non-combustible materials. The entire structure perimeter shall comply.

5.2.7 Enhanced Fire-Resistive Construction Requirements. In addition to the above Basic requirements for all structures, the following Enhanced Fire-Resistive Construction Requirements are required for all residential structures on all lots. The Enhanced Fire-Resistive Construction Requirements are as follows:

- 1) All rain gutters, down spouts and gutter hardware shall be constructed from metal or other noncombustible material to prevent wildfire ignition along eave assemblies. Gutters shall be designed to reduce the accumulation of leaf litter and debris that contribute to roof edge ignition.
- 2) All side yard fence and gate assemblies (fences, gate and gate posts) when attached to the home shall be of non-combustible material. The first five feet of fences and other items attached to a structure shall be of non-combustible material.
- 3) No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or in other overhanging areas.
- 4) All projections (exterior balconies, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) on specified lots shall be of non-combustible construction, one-hour fire resistive construction on the underside, or heavy timber construction. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain the fire-resistive integrity of the wall.
- 5) Exterior doors shall be approved non-combustible construction, solid core wood not less than 1 3/4 inches thick or have a fire protection rating of not less than 20 minutes.

5.3 Water Supply. Water service to the proposed Fallbrook Oaks Subdivision (TM 5449) will be provided by the Rainbow Municipal Water District. Hydrants, mains and water pressures have been designed to comply with County of San Diego Code requirements. The project shall provide three residential fire hydrants identified in NCFPD letter dated March 20, 2007. Additionally, the project

shall provide a hydrant at lot 16 as configured in exhibit dated 28 February 2008. Refer to Civil Engineering Design Plans.

5.4 Access Roads. All streets and cul-de-sacs have been designed to County of San Diego standards. (Refer to Civil Engineering Design Plans). Clearance of brush or vegetative growth along new and existing on and off-site roadways will comply with Consolidated Fire Code for the 17 Fire Protection Districts in San Diego County.

- Clearance of Brush or Vegetative Growth from Roadways: The area on each side of the improved width of highways and private roads shall comply with the requirements of Fuel Modification Zone 2.
- Provide a fire department turnaround at terminus of driveway on Lot 15.
- Provide a fire department turnaround at the of driveway on Lot 19.

5.5 Requirements for inclusion in the CC&R's:

- The lot/home owner is personally responsible for all required fuel treatment measures within his or her lot.
- The Fallbrook Oaks Community HOA Board has authority for enforcing required fuel treatment measures on all lots and restrictions on combustible structures on all restricted lots.
- The Fuel Treatment Zones, as depicted on the Fuel Treatment Map, will be shown on the CC&Rs and recorded against all lots. The Fallbrook Oaks Community HOA Board will be responsible for enforcing all required fuel modification treatments on all lots.
- All property owners are members of the Fallbrook Oaks Community HOA and will financially support the annual maintenance of all required Fuel Modification Areas surrounding the Fallbrook Oaks.
- The Fallbrook Oaks Community HOA Board is responsible to the Fire Marshal for the completion of all required Fuel Modification Treatments prior to the annual fire season.
- All individual lot landscaping plans, including construction of primary residence and additional structures (see Section 5.2.2), must be approved by the Fallbrook Oaks Community HOA Board and shall comply with the Fire Protection Plan.
- Any disputes relating to Fallbrook Oaks Community HOA Board approval of individual lot landscaping, with regard to interpretation of the Fire Protection Plan, shall be decided by the North County Fire Protection District Fire Marshal. The Fire Marshal's decision shall be final and binding on the lot owner.

Maintenance Inspection Plan

It is recognized that the proposed HOA for TM 5449 is responsible to ensure that any needed maintenance is accomplished as established in CC&R's and the Fire Protection Plan for the development. Because the development is within a Very High Fire Severity Zone, as designated by the State of California, additional inspection criteria exists to ensure continued compliance. The "*Very High Fire Hazard Severity*" is defined as a zone which may be in a local fire department's jurisdiction or the State's (SRA), an area at significant risk for

conflagration, typically due to a combination of dense vegetation, steep terrain and limited access to fire-suppression resources.

The Maintenance Inspection Plan shall establish the following:

Establish an HOA that will be responsible to insure that any needed maintenance is accomplished as established in the CCRs and the Fire Protection Plan for the development. Because this development is within a Very High Fire Severity Zone, as designated by the State of California additional inspection criteria exists to ensure continued compliance. The HOA shall be required to annually fund an inspection performed by the North County Fire Protection District. Costs shall be calculated at the current hourly rate for a top step fire inspector for a period of 20-hours. Budgeted hours shall be used in the following manner:

- Conduct inspections of common areas and fuel modification treatment zone maintenance (HOA Common Areas and individual owner lots) and make recommendations to the HOA to correct any inadequacies or discrepancies;
- Conduct inspections to ensure compliance with the Fire Protection Plan in regards to appendages and other accessory buildings, structures and fencing. Conduct inspections to ensure compliance with the Fire Protection Plan in regards to prohibited plant species and landscaping;
- Update any records and provide a written report of compliance to the HOA.

Other: Roads and hydrants to be installed and serviceable prior to issuance of building permits.

6.0 Proposed Fuel Treatment Location Map

The FUEL TREATMENT LOCATION MAP depicts the location of all proposed fuel modification treatment locations on and adjacent to all lots. All exterior boundaries of Fuel Management Zones 2 and 3 shall be permanently marked on the ground for the purpose of guiding annual fuel management maintenance and inspection operations. The most reliable markers are steel fence posts with a baked on painted finish. The upper half of the above ground portion of the fence post is then painted a bright "day glow" orange to improve visibility. These Fuel Treatment Zone markers must be spaced so that the markers on each side of an installed marker can be seen from that marker.